

an antenna that comprises steering means for steering the antenna toward the satellite in response to control signals supplied thereto;

antenna control means for providing the control signals to the antenna and for processing status signals derived from the antenna to steer the antenna so that it is locked onto encoded RF signals transmitted by the satellite, and for downconverting the encoded RF signals to provide encoded left hand and right hand circularly polarized RF signals that correspond to a plurality of encoded television channels;

a receiver coupled to the antenna control means for processing the downconverted encoded RF signals to provide encoded video and audio output signals corresponding to the plurality of television channels, and for feeding back the status signals to the antenna control means which are used to steer the antenna to lock it onto the RF signals received from the satellite;

a modulator coupled to the receiver for modulating the encoded video and audio signals;

a video and audio distribution system coupled to the modulator for distributing the modulated and encoded video and audio signals to each passenger's seat;

seat electronics circuitry coupled to the video and audio distribution system that comprises a demodulator, a decoder and digital to analog converters, and a tuner, for demodulating, decoding and D/A converting the modulated and encoded video and audio signals into signals that may be viewed and heard by a passenger at a seat by way of a display and headphones.

[2. The system of claim 1 wherein the modulator comprises a combiner to modulate signals derived from additional video and audio sources.]

[3. The system of claim 1 wherein the seat electronics circuitry further comprises game electronics for displaying games on the display.]

[4. The system of claim 1 wherein the antenna control means comprises:

an antenna controller coupled to the receiver for processing status signals derived therefrom; and

an antenna interface unit coupled between the antenna and the receiver for downconverting the RF signals to provide the left hand and right hand circularly polarized RF signals that contain different sets of television channels, and coupled between the antenna controller and the antenna for coupling the control and status signals therebetween.]

[5. The system of claim 4 wherein the antenna controller comprises:

a controller;

an RS485 interface coupled between the controller and the antenna interface unit for coupling the control and status signals to the controller; and

an ARINC 429 interface coupled between the controller and a navigation system for coupling inertial reference signals provided by the navigation system to the controller which are used to generate steering signals that steer the antenna toward the satellite.]

[6. The system of claim 5 wherein the antenna interface unit comprises:

a downconverter for downconverting the RF signals received from the antenna and for outputting the downconverted RF signals to the receiver;

a servo controller coupled between the RS485 interface of the antenna controller and the antenna for processing

antenna position signals to generate elevation motor drive signals that are supplied to the antenna, and for outputting azimuth control signals;

a servo power amplifier coupled between the servo controller and the antenna for supplying power to the antenna, and for processing motor position control signals derived from the antenna and the azimuth control signals derived from the servo controller to generate azimuth motor drive signals that are supplied to the antenna.]

[7. The system of claim 1 wherein the receiver comprises:  
a passive mother board having first and second computer busses;

a receiver card coupled to the first computer bus;

a computer processor coupled to the first computer bus;  
and

a flash disk card coupled to the second bus for storing video, audio and control signals.]

[8. A method of providing a large number of television channels derived from satellites of a direct broadcast satellite system to each passenger on an aircraft, said method comprising the steps of:

steering an antenna toward the satellites;

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downconverting encoded RF signals transmitted by the satellites to provide encoded left hand and right hand circularly polarized RF signals that correspond to a plurality of encoded television channels;  
processing the downconverted encoded RF signals to provide encoded video and audio output signals corresponding to the plurality of television channels;  
modulating the encoded video and audio signals;  
distributing the modulated and encoded video and audio signals to each passenger's seat using a video and audio distribution system;  
receiving the modulated and encoded video and audio signals at seat electronics circuitry;  
demodulating, decoding and D/A converting the modulated and encoded video and audio signals into signals that may be viewed and heard by a passenger at a seat by way of a display and headphones.]

9. The method of claim 8 which further comprises the step of:

generating signals derived from the downconverted encoded RF signals to steer the antenna and lock it onto the RF signals received from the satellites.]

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--10. A satellite television system that provides television channels to each passenger on an aircraft derived from at least one satellite, said system comprising:

(a) an antenna that comprises a steering device for steering the antenna toward the at least one satellite in response to control signals supplied thereto;

(b) an antenna controller to provide the control signals to the antenna and for processing status signals derived from the antenna to steer the antenna so that it is locked onto encoded RF signals transmitted by the satellite, and for downconverting the encoded RF signals to provide downconverted RF signals that correspond to encoded television channels;

(c) a receiver coupled to the antenna controller to process the downconverted RF signals to obtain encoded output signals corresponding to the television channels;

(d) a modulator coupled to the receiver for modulating the encoded output signals to provide modulated and encoded signals;

(e) a distribution system coupled to the modulator for distributing the modulated and encoded signals to each passenger's seat; and

(f) seat electronics circuitry coupled to the distribution system for demodulating, decoding and D/A converting the modulated and encoded signals into signals that are provided to said each passenger's seat.

11. The system of claim 10, wherein the downconverted RF signals correspond to left hand and right hand circularly polarized downconverted RF signals

12. A method of providing a plurality of programming channels obtained from at least one satellite, to a plurality of passengers on an aircraft, said method comprising:

steering an antenna towards the at least one satellite;

downconverting encoded RF signals transmitted by the at least one satellite to provide encoded, polarized RF signals that correspond to a plurality of encoded programming channels;

processing the downconverted encoded RF signals to provide encoded video and audio output signals corresponding to the plurality of programming channels;

modulating the encoded video and audio signals;

distributing the modulated and encoded video and audio signals to a plurality of passenger seats;

receiving the modulated and encoded video and audio signals at each of the plurality of passenger seats; and

demodulating, decoding and D/A converting the modulated and encoded video and audio signals into signals that may be viewed and heard by a passenger at a seat.--

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